

REMARKS

Claims Status

Claims 1-15 and 19-40 were previously cancelled.

Claims 16 and 17 are currently amended. Except as otherwise noted here, written support for these amendments is discussed in the below remarks. In claim 17, step vi is amended to clarify that the bsc seed to be mixed is that which was propagated in step v. Support for this amendment is inherent to the claim itself, given its stepwise recitation. Step iv of claim 17 is amended to clarify that the bsc seed is separated from the grain of step iii of claim 16. Skilled artisans would recognize that, of the grains harvested in steps ii and iii of claim 16, only grain harvested from the latter step will contain a significant percentage of bsc seed since a sufficient number of generations would have passed to bestow not only a bsc homozygous genotype, but also a bsc phenotype. This rationale for support similarly applies in considering the phrase “or homozygous”, which is added to the preamble of claim 16.

Claims 41-49 are new and cover certain preferred embodiments of the claimed invention. Examples of written support for claims 41, 43, 46 and 47 are in pages 8 (lines 20-30) and 9 (lines 1-6) of the specification. Claim 43 refers to the cross-pollination that occurs between soybean plants in alternating rows; this feature is inherent to the process embodied in claim 16 (please refer to below remarks). Regarding support for claims 42 and 44, specific disclosure of using the herbicide glyphosate (e.g. Roundup-Ultra) in the claimed method is in Example 1, for example. Written support for claim 45 is in claim 1 of the application as originally filed, as well as in the specification as currently amended (page 3, refer to below comments). Claims 48 and 49 have written support in the specification at page 3 (lines 4-12).

Applicants respectfully submit that the foregoing amendments do not introduce any new subject matter to the application. With the present amendments, there are twelve claims pending, namely claims 16-18 and 41-49.

Information Disclosure

In the Office Action, Examiner indicates that the references listed on page 32 of the specification have not been considered since they have not been submitted via an information disclosure statement (IDS). Applicants do not consider these references as being material to the patentability of the currently claimed invention. These citations are only made to provide guidance to those readers who are relative laypersons in the field of plant genetics. That being said, efforts have been made to satisfy the disclosure requirements of the Patent Office with the filing of four separate IDS's during these proceedings.

Priority

Examiner denies the instant application priority to Provisional Application Serial No. 60/267,551 (the '551 application), filed February 9, 2001, on the basis that it describes "harvesting *all* seed produced from a mixed planting of homozygous yellow and homozygous black seed at pages 21-23, and thus does not support step 'ii)' of instant claim 16" (emphasis added). On the other hand, priority of the instant application to the October 9, 2001 filing date of Provisional Application Serial No. 60/327,801 is acknowledged by Examiner.

Step ii of claim 16 as currently pending recites that only the rows of the cultivar having the proprietary trait is harvested for grain. The '551 application contains adequate written description for this subject matter in Example 3 (page 12), for example. Accordingly, Applicants respectfully submit that the instant application should be accorded priority to the February 9, 2001 filing date of the '551 application.

Claim Objections

Examiner objects to claims 17 and 18 under 37 CFR § 1.75(c) as being in improper dependent form for failing to further limit claim 16. Applicants respectfully traverse this objection for the following reasons.

As amended, the methods of claims 16-18 mostly recite the same elements as the previous claims, but now refer to a different method endpoint (refer to claim 16 preamble). Instead of being specifically directed to a method of generating seed that is heterozygous for seed coat color, the pending claims recite that the method is for preparing soybean seed mixes. This latter endpoint better conforms to what the inventive method is aimed to accomplish: the production of a seed mix that allows proprietors to monitor license conformance by patron growers.

Certain written support for the preamble amendment to claim 16 is at page 8 of the specification (lines 20-30), which describes the generation of commercial seed containing bsc seed via preparing a field mix. Since both claims 17 and 18 further narrow the methodology by which the seed mixes are procured, these claims are in proper dependent form with respect to claim 16.

Claim Rejections – 35 USC § 112, second paragraph

Claim 16 stands rejected under 35 USC § 112, second paragraph, as being indefinite for not reciting cross-pollination steps. Examiner alleges that since “the instant art recognizes that there is very little if any out-crossing in soybeans, it is unclear how one generates soybean seed heterozygous for seed coat color just by random chance.” Further, claims 17 and 18 are rejected as being indefinite for depending on claim 16. Applicants traverse this rejection for the following reasons.

Contrary to the above allegation, the specification (page 10, lines 26-30; page 11, lines 1-4) teaches that there is a low, but real, rate of out-crossing in soybeans – this rate is taken advantage of in the claimed methods. Furthermore, the Lewers et al. reference cited in the obviousness rejection (below) confirms that cross-pollination occurs between soybean plants in different rows. The low level of cross-pollination is an important aspect of the claimed invention, as it is necessary that there only be a small percentage of bsc seed in the grain mixtures that will be sold to growers. Too high a percentage of bsc seed yields a seed mix undesired by growers. Also, the low percentage of bsc seed in the actual retail grain mix permits growers to propagate the seed for a number of generations before seeing an unacceptably high occurrence of bsc seed. In view of the above remarks, Applicants respectfully submit that this first clarity rejection is moot.

Claim 17 is further rejected as indefinite on the basis that the limitation “the yellow seed coat variety” lacks proper antecedent basis. This claim is partly amended at step vi) to recite commercial cultivars having the proprietary trait. Since the latter term has antecedent basis in claim 16, the second clarity rejection is moot. Written support in the specification for this amendment is at pages 8 (lines 20-30) and 9 (lines 1-6), for example.

Examiner rejects claim 18 as indefinite on the basis that the limitation “the commercial cultivar seeds” lacks proper antecedent basis. With the current amendment adding the commercial cultivar seed terminology to claim 17, the elements of claim 18 have complete antecedent basis. Applicants respectfully submit that this third clarity rejection is moot.

Claim Rejections – 35 USC § 112, first paragraph (Enablement)

Claims 16-18 stand rejected under 35 USC § 112, first paragraph, as not being enabled by the specification. In the first rejection, Examiner alleges that the provision of soybean cultivars

having proprietary traits would prevent the public from practicing the claimed method. Applicants traverse this rejection for the following reasons.

In leveling this rejection, Examiner alleges that, “since the ‘cultivars that contain the proprietary traits’ are required to practice the claimed method”, skilled artisans would not be able to practice the claimed invention because such traits are not publicly available. On the contrary, skilled artisans would readily acknowledge that most practitioners of the invention will be those that actually derived and/or own the proprietary trait. Such parties could be members of the public (e.g. independent breeders and other companies) who would practice the method using their own soybean lines having modified phenotypes of commercial interest. Therefore, the recitation of proprietary traits in the claims does not preclude anyone from practicing the invention. Finally, in point of fact, the proprietary trait feature plays no real role in the operability of the claimed method – knowing the exact basis of a certain phenotype (e.g. a genetic event guarded by a trade secret) neither affects invention function nor prevents facile invention use. For the above reasons, Applicants respectfully request that this first enablement rejection be withdrawn.

In the second enablement rejection, Examiner indicates that the claims do not directly recite a genotype corresponding to the black seed coat trait, and therefore alleges that undue experimentation would be required by skilled artisans to practice the invention. Applicants traverse this rejection for the following reasons.

The genetic determinants of black seed coat color are well known in the art. Consequently, use of the method by skilled artisans would not require any undue experimentation in this regard. Nevertheless, claim 16 is currently amended to recite that the black seed coat soybean plants have the homozygous genotype RRiiTT. Written support for this

amendment is in the specification at page 7 (lines 17-24). In view of this amendment, Applicants respectfully submit that this second enablement rejection is moot.

Claim Rejections – 35 USC § 103

Claim 16 stands rejected under 35 USC § 103(a) over Webb (U.S. Patent No. 5,491,081) in view of Lewers et al. (1996, *Crop Science* 36:1560). Examiner alleges that the combination of these references teaches the claimed method. Applicants traverse this rejection for the following reasons.

Examiner points to Webb at column 1, final paragraph, which discloses the crossing of soybean isolate PI437654 with elite varieties in order to introgress a soybean cyst nematode (SCN) resistance trait from the former to the latter plants. At this paragraph, Webb relates that “PI437654 has black seed coat, poor standability, seed shattering, and low yield, necessitating the introgression of its SCN resistance into elite germplasm *with a minimum of linkage drag*” (emphasis added). Basically, Webb suggests transmitting the SCN resistance trait to elite varieties without co-transmitting PI437654’s otherwise undesirable traits such as black seed coat color.

A protocol for this transmission would involve crossing PI437654 with an elite line, followed by monitoring F1 progeny for the desired SCN resistance phenotype. Those F1 plants having this phenotype would then be backcrossed multiple times with the elite parent in an effort to fix the desired trait in the elite background, while at the same time reducing/eliminating the persistence of undesired traits such as black seed color that might have been passed onto the F1 generation. This conventional protocol, however, would not involve crossing F1 plants with PI437654 – this is the important difference between Webb and the method of claim 16.

Step i of claim 16 recites crossing genetically modified plants with bsc plants. In step iii, seed (i.e. F1 progeny) produced in step i by the cultivar having the proprietary trait is planted and crossed *again* with bsc plants. This step is taken in order to ensure that the bsc trait, which was recognized in the art as an undesired trait, *is* transmitted to the progeny. Though it is acknowledged by Applicants that Webb teaches step i, this reference does not teach or suggest step iii of claim 16. Furthermore, Webb actually teaches away from the breeding program of claim 16 (please refer to above quote). The disclosure of Lewers does not fill this void.

Finally, it is worthwhile mentioning that the seed mix obtained by practicing the method of claim 16 would have been considered undesirable by patron growers due to the presence of bsc seed. This non-obvious feature also applies to the seed mixes obtained from practicing claims 17 and 18, as Examiner acknowledges. Just as the purposeful mixing step of claim 17 stands in stark contrast with the teachings of the prior art, so does step iii of claim 16. In view of the above remarks, Applicants respectfully request the withdrawal of this obviousness rejection.

Amendment to the Specification

The subject matter of original claim 1, which is directed to a seed mix composition, was not directly disclosed in the description portion of the original specification. Therefore, in compliance with MPEP § 608.01(I), which requires amendment of the specification to contain description of all subject matter listed in the original claims, Applicants amend the specification at page 3 to include language directed to the claim 1 composition.

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Aside from the fee for the three-month extension of time, no other fee is believed to be due in relation to this response. However, should any other fees be required for any reason relating to the enclosed materials, the Commissioner is authorized to deduct said fees from Deposit Account No. 08-3038/11898.0021.NPUS01.

Respectfully submitted,



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